



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/596,487

06/15/2006

Armin Schwerdtner

5035-248US/P32324 USA

7273

20802

7590

04/01/2008

SYNNESTVEDT LECHNER & WOODBRIDGE LLP

P O BOX 592

112 NASSAU STREET

PRINCETON, NJ 08542-0592

EXAMINER

LAM, HUNG Q

ART UNIT

PAPER NUMBER

2883

MAIL DATE

DELIVERY MODE

04/01/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/596,487	Applicant(s) SCHWERDTNER, ARMIN	
	Examiner HUNG LAM	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/18/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Application

Claims 1-15 are pending in this application.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on January 18, 2007 was filled in compliance with the provisions of 37 CFR 1.97. The examiner has considered the information disclosure statement.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy of Foreign Priority Application has been received.

Drawings

The drawings submitted on June 15, 2006 are accepted as part of the formal application.

Specification

The specification is accepted as part of the formal application.

Applicant cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. For instance, the phrase “and/or” in line 3 of claim 14, is considered to be vague and indefinite because it is unknown whether subject limitations are to be considered in combination or in alternate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

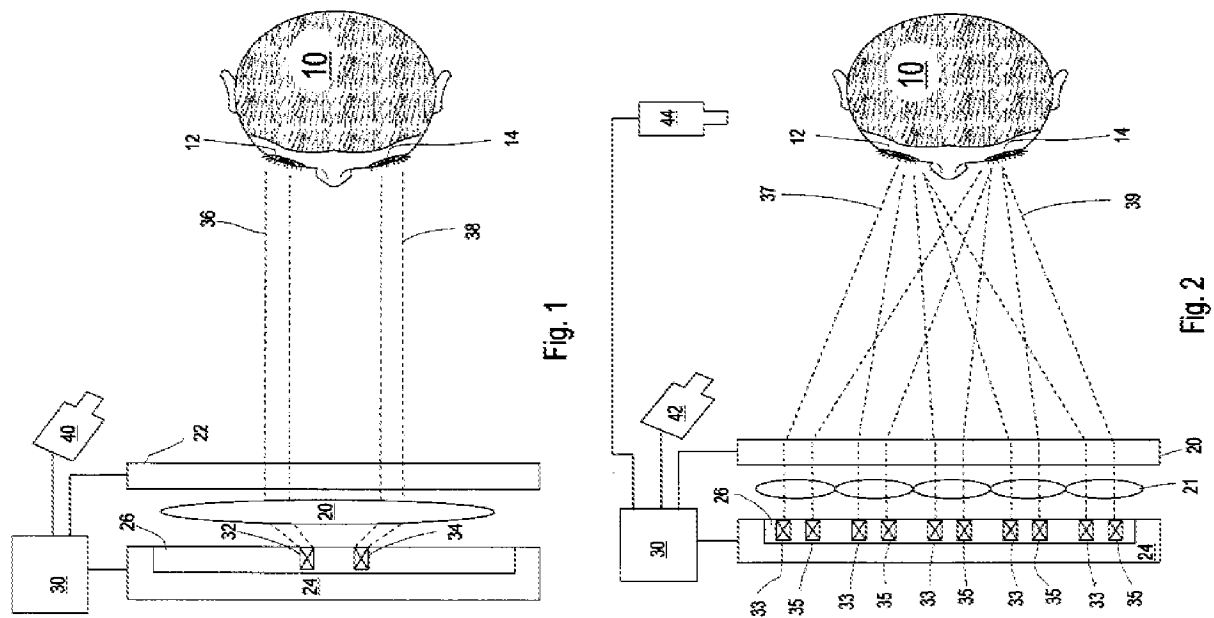
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Barnea** (US. Pat. 5,771,066) in view of **Travis** (US. Pat. 5,132,839).

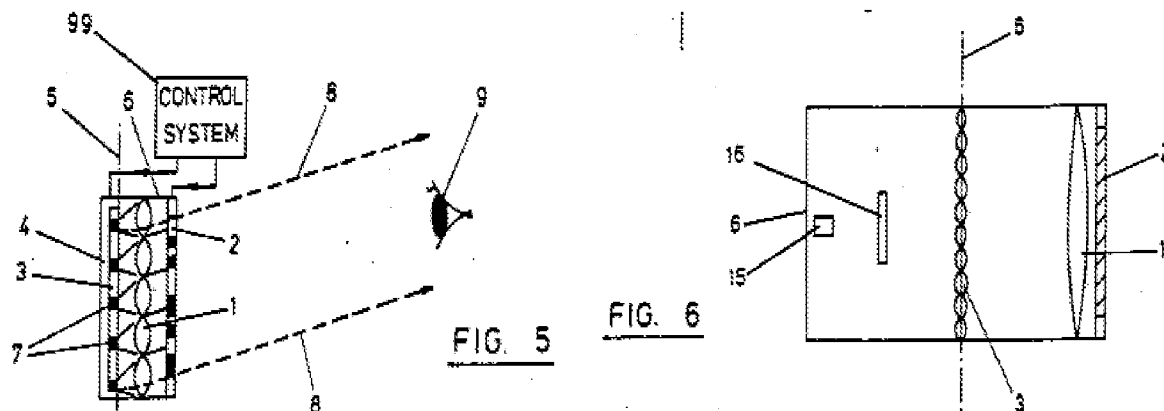
Regarding claim 1, Barnea discloses in **second embodiment (i.e. Fig. 2)** an autostereoscopic multi-user display having a sweet-spot unit that is direction- controlled by a tracking and image controller 30, wherein the sweet-spot unit has an illumination matrix 26 that includes a multitude of illumination elements these can be activated individually (i.e. 32, 34), and an imaging device 21 having lens elements (i.e. lenticular array 21) for imaging alternately active illumination elements in the form of directed bundles of rays onto extended sweet-spots which correspond with different eye position, so that right and left images of a stereoscopic image sequence provided on a transmissive image display matrix 22 **(i.e. in first embodiment, Fig. 1)** can be rendered visible at right/left eye positions (i.e. 12 and 14) of observer 10, whereby the tracking and image controller 40 defines a direction for each bundle of rays (37 and 39) by activating at least one illumination element of the illumination matrix 26 per eye position , lens element (i.e. lenticular array 21) and line, so that all bundles of rays (i.e. 37 and 39) coincide at the position of that sweet-spot, wherein the imaging device 21 comprises: an imaging means having a multitude of lens element (i.e. lenticular array 21 with short focal distance, so that the active illumination elements are imaged onto the sweet-spots in an enlarged fashion, and a field lens 20 which is disposed behind the imaging means 21 in the direction of light propagation and which has a much longer focal distance than the lens elements (i.e. lenticular array 21), in order to keep constant and at a minimum the distance between adjacent bundles of rays (i.e. 37, 38), so

that the definition of directions of the bundles of rays is supported with the illumination matrix 26 (first embodiment, second embodiment, Fig. 1 and Fig. 2).



Reproduced from US. Pat. 5,771,066: Fig. 1—Embodiment 1, and Fig.2—Embodiment 2).

Travis discloses a three dimensional autostereoscopic display device comprising image controller 99, image display matrix (i.e. spatial light modulator 2), illumination matrix (i.e. beam scanner 16), imaging device (i.e. lensticular 3), and a field lens 1, which is disposed behind the imaging device (i.e. lensticular 3) in the direction of light propagation from light source 15 (Fig. 5 and 6).



Reproduced from US. Pat. 5,132,839.

Therefore, it would have been obvious to the one having ordinary skill in the art at the time the invention was made to apply the teachings of **Travis** to modify the device of **Barnea** by providing the field lens behind the imaging device (i.e. lensticular) in the direction of light propagation from light source. The motivation for doing so is because “it will be appreciated by those skilled in the art that either of the lens and spatial light modulator systems of FIGS. 1 and 2a or 4 and 5 can be utilized to effect the three dimensional apparatus” and “is preferred where a single lens 1” that would reduce the fabrication cost (Travis, col. 9 lines 20-25).

Regarding claims 2 and 9, in accordance with the rejection of claim 1, **Travis** further discloses that the lens elements of imaging means (i.e. lensticular 3) have a short focal distance, and the imaging means and illumination matrix 16 are disposed at the about this distance to each other (Travis, col. 9 lines 1-7, and Fig. 6).

Regarding claim 3, in accordance with the rejection of claim 1, **Barnea** modified by **Travis** further disclose that the tracking and image controller 30 with video camera 40 controls the illumination matrix 26 so that for each eye position (i.e. 12,14) a bundle of rays in the centre of the imaging means leaves the imaging means directed at the eye position, while all other bundles of rays leave the imaging means near-parallel to the central bundle of rays, and that the field lens coincides all bundles of rays to form a sweet-spot at the corresponding eye position (Barnea, Fig. 1- first embodiment, and Fig. 2- second embodiment).

Regarding claim 4, in accordance with the rejection of claim 1, **Barnea** modified by **Travis** further disclose that the field lens 1 is a Fresnel lens (Travis, col. 5 lines 4-7, and Fig. 6).

Regarding claims 5 and 7, in accordance with the rejection of claim 4, **Barnea** modified by **Travis** further disclose claimed invention but do not explicitly disclose that the cuts of the field lens are designed as regards their focal distance and angle of entry of the bundles of rays so that the bundles of rays are cincted clearly in front of an optimum observer distance, without the bundles of rays themselves converging considerably, wherein the focal distance of the field lens lies in between a half and a full optimum distance between observer and the display. However, it would have been obvious to one having ordinary skill in the art would designed the cuts of the field lens based on the lens reflection angle and focal distance range in related to an optimum observer range, in order to obtain an optimum observation distance range to a viewer.

Regarding claim 6, in accordance with the rejection of claim 4, **Barnea** modified by **Travis** further disclose that it contains a position detector (40 or 42) combined with the image controller 30 together to keep track on the viewers eyes positions based on their relative position, therefore, the image display matrix and the illumination elements will be adjusted accordingly (Barnea, Fig. 1- first embodiment, and Fig. 2- second embodiment).

Regarding claim 8, in accordance with the rejection of claim 7, **Travis** further discloses that the field lens 1 is a controllable holographic optical element (HOE) with a controllable focal distance, and that the tracking and image controller sets its focal distance according to the detected distances (Travis, col. 5 lines 4-7, and Fig. 6).

Regarding claim 10, in accordance with the rejection of claim 4, **Travis** further discloses that the illumination matrix 4 contains a backlight and an electronic shutter (i.e. liquid crystal shutters) having openings, location and transmission of said openings being discretely controllable (Travis, col. 4 lines 60-66, and Fig. 5).

Regarding claim 11, in accordance with the rejection of claim 10, **Travis** further discloses that the image display matrix 2 and shutter of illumination matrix 4 have the same pixel geometry (Travis, col. 8 lines 5-15, and Fig. 4-5).

Regarding claim 12, in accordance with the rejection of claim 1, **Travis** further discloses that the illumination matrix is a regular array of actively light-emitting elements, location and intensity of said elements being discretely controllable (Travis, col. 4 lines 60-64).

Regarding claim 13, in accordance with the rejection of claim 1, **Barnea** modified by **Travis** further disclose the claimed invention except that the imaging means is partially made of a material with optical properties that are controllable. Since applicant has not pointed to any criticality of such that type material, it would have been obvious to the one having ordinary skill in the art at the time the invention was made would select any material with optical properties that are controllable for the imaging means, since it has been to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. The motivation for doing so is to control the focus of the imaging means in order to obtain a desirer focusing. This rejection may be overcome by a showing or unexpected results associated with such that type of material.

Regarding claim 15, in accordance with the rejection of claim 1, **Barnea** further discloses that several adjacent illumination elements per projection element and image line are activated simultaneously, so to ensure homogeneous illumination of the image display matrix (140) and to enlarge the sweet-spots (Barnea, Fig. 2- second embodiment).

Cited Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ezra et al. (US. Pat. 5,392,140).

Brown et al. (US. Pat. 6,859,240).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG LAM whose telephone number is (571)272-9790. The examiner can normally be reached on M - F 07:30 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hung Lam/
Examiner, Art Unit 2883

/Charlie Y. Peng/
Patent Examiner, Art Unit 2883

CYP/hql

Application/Control Number: 10/596,487
Art Unit: 2883

Page 10

03/31/2008